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In the "Canadian Architect and Builder."

DIRECTORY OF LEADING STONE AND GRANITE DEALERS

House in Crescent Road, Toronto.

S. H. Townsend, Architect.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
JUNE, 1903

AN INTERIOR—THE CEILING IN A SINGLE TONE OF OLD PLASTER COLOR; THE FRIEZE AN ORIGINAL MURAL PAINTING IN OIL; WOOD-WORK, DARK WEATHERED OAK.

DECORATIONS BY W. H. ELLIOTT & SON CO., TORONTO.

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HOUSE IN ROXBOROUGH STREET WEST, TORONTO.

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LIVING ROOM, HOUSE IN ROXBOROUGH STREET WEST, TORONTO.

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CANADIAN ARCHITECT AND BUILDER
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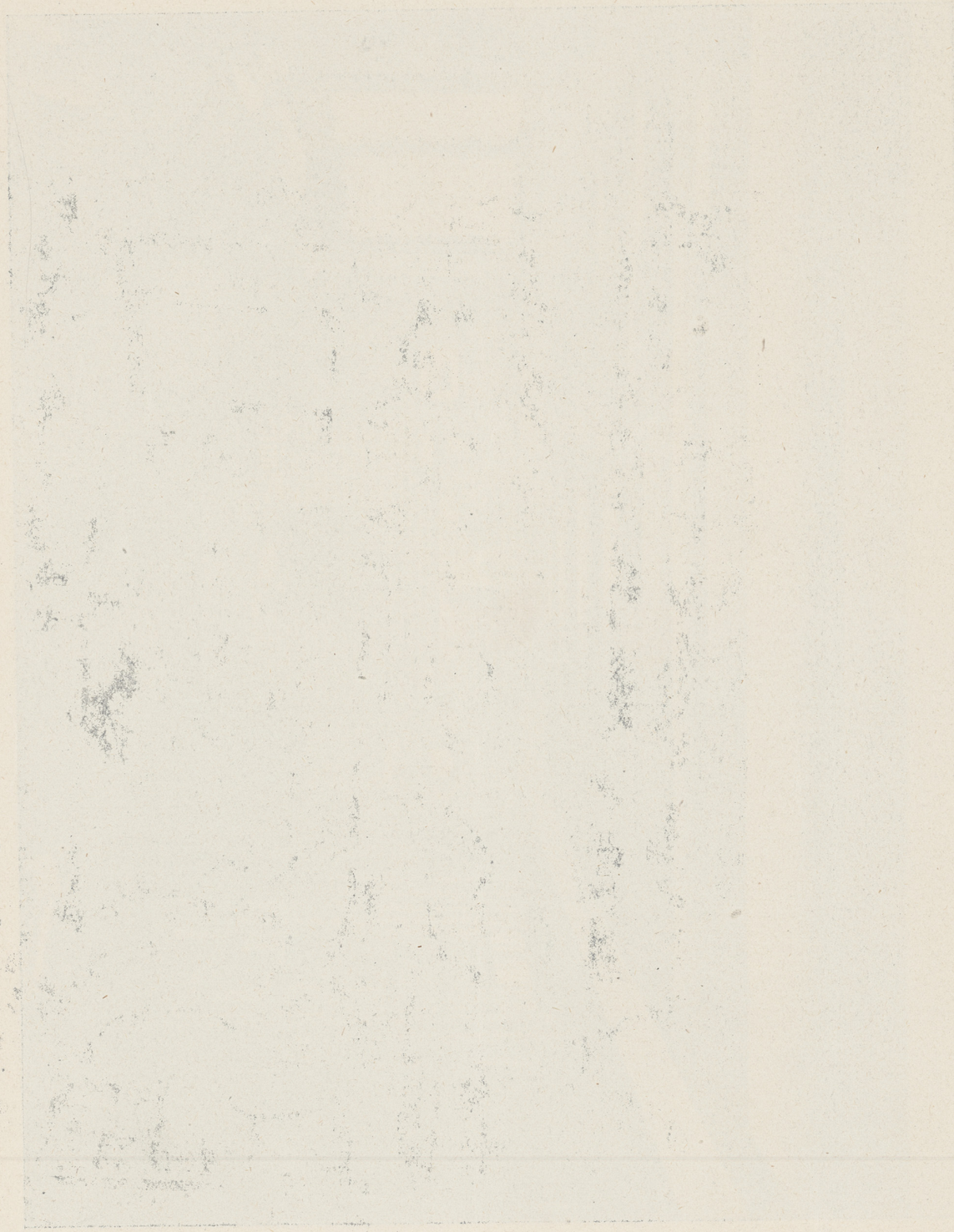

The Canadian Architect and Builder

VOL. XVI.—NO. 186. JUNE, 1903.

ILLUSTRATIONS ON SHEETS.

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Exterior and Interior Views of House in Roxborough Street East.—Chadwick & Beckett, Architects.
An Interior—The Ceiling in a Single Tone of Old Plaster Color; the Frieze an Original Mural Painting in Oil; Wood-work, Dark Weathered Oak.—Decorations by W. H. Elliott & Son Co., Toronto.

ADDITIONAL ILLUSTRATIONS IN ARCHITECTS' EDITION.

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ILLUSTRATIONS IN TEXT.

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SPECIAL CONTRIBUTORS.

PROF. S. H. CAPPER, R.C.A., Department of Architecture, McGill University, Montreal
MR. W. A. LANGTON, Architect, Toronto.
" EDMUND BURKE, " "
" S. H. TOWNSEND, " "
" FREDERICK G. TODD, Landscape Architect, Montreal
" W. H. ELLIOTT, Toronto.
" J. C. B. HORWOOD, Architect, Toronto.
" A. F. DUNLOP, R.C.A., Architect, Montreal.
" FRED. T. HODGSON, Architect, Collingwood, Ont.

Canadian Building Materials for Japan.

The Hon. Sydney Fisher, who has recently returned from a visit to Japan in connection with the exhibit which Canada is to have at the Osaka Exhibition, states that a market exists there for various lines of Canadian products natural and manufactured. These include lumber, furniture and sheet metal building material. The Japanese Minister of Education was greatly impressed with the adaptability to school building of the metal roofing and ceiling material forming part of the Canadian exhibit, and promised to send one of his architects to inspect it.

Brick Tests.

The result of a series of tests made to determine the weak points of bricks under different conditions, was recently presented to the American Society of Civil Engineers in the form of a paper containing numerous tables and illustrated by photographs and diagrams. Tests were made for compression, tension, bending shear and torsion, the following being shown to be the order of increase in strength: Tension, shear, torsion bending compression. Further the tests showed that water does not cause deterioration in strength, while reheating greatly improves the quality.

Effect of Climatic Conditions on Cost of Building.

The opinions of more than twenty-five representative Canadian architects and contractors as to the relative advantages and economy of finishing buildings in winter and summer, are printed in the present number. The subject is considered from every point of view. The letters make interesting and instructive reading, and should help to settle in the minds of building owners, architects and contractors, an important question on which there has hitherto been wide divergence of opinion. The consensus of opinion expressed by our correspondents is strongly in favor of the advantage of summer work. Many good and apparently sufficient reasons are given in support of this view, although the minority who hold to the opposite belief, are not without reasons to support their position. There are many questions of perhaps equal importance on which a comparison of experiences would be profitable.

Fireproofing That is Not Fireproof.

The destruction of the Roosevelt Building in New York teacshe that it is useless to spend money in fireproofing buildings unless every detail of the work is thoroughly done. This building was supposed to be

fireproof. The floors were of steel beams and terra cotta arches, the flanges protected and the space above the arches filled in with concrete. It had a tile roof. But, one of the elevator shafts was unprotected, the columns supporting the different floors were of cast iron, unprotected, and there were numerous partitions glazed in the upper portion with ordinary glass. These caused the destruction of the building. The fire shot up the elevator shaft, the unprotected cast iron columns and glass partitions cracked and gave way, letting down the roof and upper floors, which in falling broke through the lower floors. Fireproofing done in this manner is not only a waste of money but the destruction of the buildings thus carelessly constructed has weakened the confidence of the underwriters and the public in the possibility of making buildings fireproof.

Strikes in the Building Trades.

The Engineering Review hits the nail on the head when it says: "The building trades seem to have rooted objection to work. At least, history shows that whenever there seems to be an excellent chance for them and their employers to make some money they, more than any other class of working men, make demands which tend to restrict building operations and throw themselves, or many of themselves, out of work." The truth of this statement was never more forcibly illustrated than this year, when the prospects for an unusually prosperous season have been to a large extent blighted by strikes. It is a pity that the wisdom of the axiom "make hay while the sun shines," is so foolishly disregarded by the workman of to-day. When the summer is ended and the coal bin needs replemishing it will perhaps begin to dawn upon the strikers that they would have been better off had they worked steadily all the year at a few cents an hour below what they demanded and were refused. Labor, unlike many other commodites, cannot be stored away and sold, perhaps at a greater profit, at a later date. The workman who refuses to sell his labor to-day is out of pocket for all time the money he might have obtained for it.

Peculiarities of Bricks Composing the Campanile.

Some interesting data, gathered from careful examination of the bricks used in the construction of the fallen Campanile at Venice, is said to have been presented in a recent lecture by Commendatore Boni to the History Congress at Rome. The lecture was illustrated by drawings. The bricks are said to have been manufactured in the first century, not from kneaded and compressed clay, as at the present day, but from slices of the natural clay. On this account each individual brick is believed to have a supporting strength four times as great as the bricks of to-day. The lecturer exhibited specimens of bricks which he had had made out of Roman clay in the same manner as the ancient ones, with the object of showing that the new Campanile might be built of the same enduring material as the old. Some of the ancient bricks are curiously marked with figures, numbers, private marks and letters. Signor Boni infers from their shape, texture and general appearance that they were made not by the Venetians, but by the Romans, and prior to being built into the Campanile had been used in fortifications and other forms of construction.

The Duty of Committees of Award.

Messrs. G. F. Bodley, R.A., and R. Norman Shaw, R.A., assessors in the Liverpool Cathedral Competition, have presented their report. They give first position to the design by Mr. Gilbert Scott, grandson of Sir Gilbert Scott. The Builder states that Mr. Scott's design entirely ignored an important condition set forth in the instructions to the competitors, viz., that the plan of the cathedral should provide for a wide open space for a large congregation within hearing of the preacher. It is probably for this reason that the Committee have expressed their intention not to accept any of the designs. We were surprised not long since to hear several architects engaged in conversation about competitions, state that it was their practice when preparing plans for a competition to ignore the limit of cost set for the proposed building. It is manifestly unjust to the competitor who honestly strives to strictly conform to all the conditions laid down, and who perhaps is hampered because of his conscientiousness in this regard, that his design should be passed over in favor of the man who sets himself to produce something which will catch the fancy of the assessors, regardless of the conditions.

ERRATA.

Through oversight the name of Mr. Frank Darling does not appear on the illustration sheets in this number showing views of the interior of the Canada Permanent and Western Mortgage Company's Offices and Board Room, Toronto. Mr. Edwards writes that Mr. Darling and himself were joint architects in the planning of these improvements.

EMPLOYMENT WANTED BY BRITISH BUILDING MECHANICS.

538 Oxford St., London, W., England.
May 31st, 1903.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

Sir,—Hearing that men are wanted in the building trades in Canada, may I suggest to you the formation of a similar society to the "Canadian Farmers Help Society." There are many men of good experience with references as to their workmanship and reliability who are quite unable to get good permanent work here in London. The work that is offered is so desultory and has no permanence except in a minority of cases. Taking myself as an example, I have had three and a half months work this year, and although I have worked to my employers' satisfaction and have good references, I am quite dependant on taking my chance with two or three hundred other applicants for the very few berths on offer here in England. Should you consider this any further or care to throw your columns open to a few advertisements from men in London wanting work in Canada, I feel sure that there would be many hundreds of men to avail themselves of your kindness. Thanking you in anticipation.

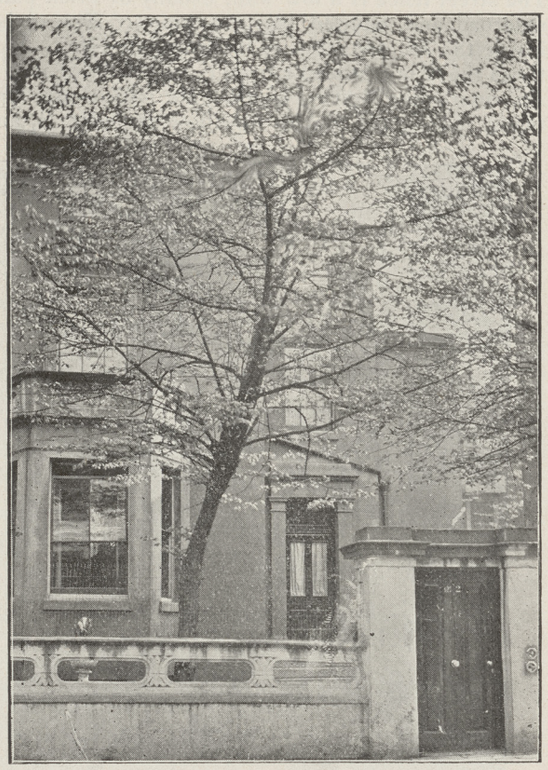
I am Sirs
Yours sincerely,
ROBERT H. BAKER.

[There is at present a brisk demand in Canada for building mechanics, as well as mechanics of all kinds, but the trade unions are demanding higher wages and shorter hours, and are strongly objecting to mechanics being brought in from Great Britain. There is no doubt, however, that competent workmen coming here at the present time would be certain to find employment at air wages. We hope that some of the workmen who find it ifficult to obtain regular employment in London, may find their way to Canada. If they are competent and sober, they can rely upon getting employment.—EDITOR, C. A. & B.]

NOTES OF TRAVEL.—I.

A LONDON HOUSE AND ITS SURROUNDINGS.

The accompanying plan shows a typical west end house of the smaller size in a good neighborhood.



VIEW OF FRONT OF HOUSE.

The plan itself is interesting, and to my mind shows a true elegance obtained by dispensing with certain

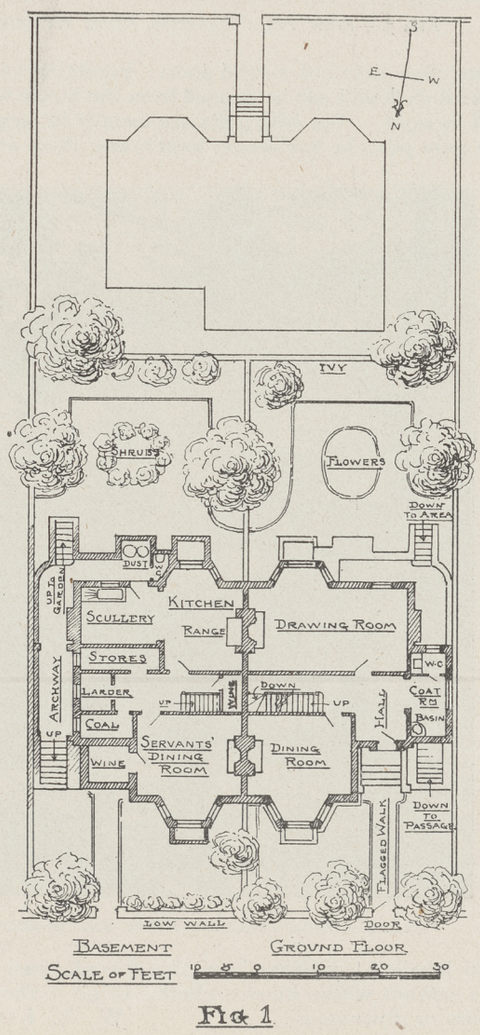


FIG 1

conditions which are usually, in Ontario at any rate, considered to be indispensable in the plan of a first-class house. In the first instance the single flight of stairs will attract attention. It is considered, with us, a matter of the first importance that every house, no matter how small, that pretends, though a cottage, to

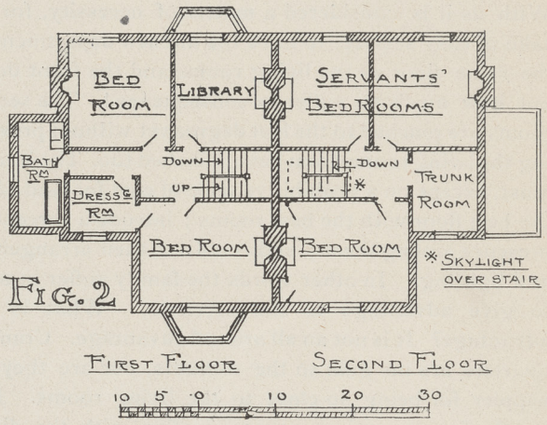


FIG. 2

be "a cottage of gentility," should have a back stair.

The greatest pains can not prevent this stair injuring the simplicity of the ground floor, and thereby adding to the cost to an extent that does not appear in the cubical contents of the staircase itself; and unless sufficient space is taken to disconnect it from the kitchen it is a sure means of conveying the smell of cooking from the kitchen to the rest of the house. The gains on the other side are that servants will not be encountered on the stair from ground to first floor, which is the extent of the back stair in this sort of house, and that the stair carpet on this stair lasts longer. The latter point must be yielded; but, if the stair is well placed—as it is in the example here given—the passage of servants is no real trouble. In the old days, when slops had to come downstairs to be carried out of the house, the back stairs had a reason for existence even in small houses; but now-a-days there is no actual traffic on the main stair during the day. It affords a means of access to the housemaid's up-stairs work; that is all. As far as the approach to the servants' bedrooms goes, it is generally conceded that this should merge in the family lines of communication for some part of its way, and that communication with the kitchen should not be too easy. It seems therefore as if too much can be made of the desirability of a back stair, and that a retired arrangement of the main stair, something after the manner of the stair in this plan, might be substituted with advantage for small houses.

The principal reason however, why the ground floor, in the plan before us, is so simple is that it has no service rooms. It would be undoubtedly better, for easy service, and the care of glass and china, to move the lavatory back and the entrance and dining room to the right and slip in a service pantry entered from a sort of back hall, formed under the stair landing by moving the door at the head of the stairs to the face of the landing at the return. But how this spoils the hall, complicates the plumbing and makes tight work of the entrance and area steps, taking from

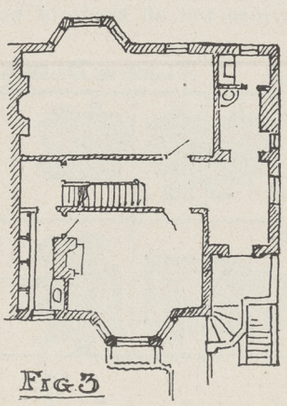


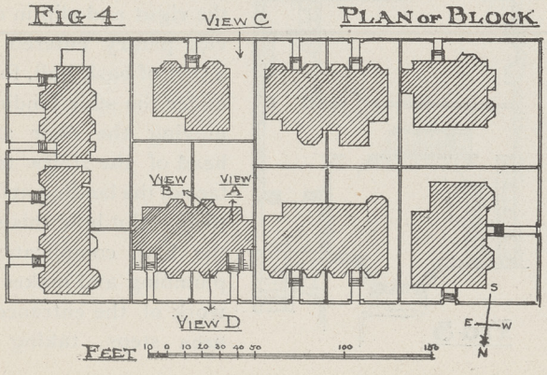
FIG 3

them their present dignity! There is however no doubt that the ground floor service room should be managed somehow. It is quite otherwise with the kitchen; the beauty, not only of this house, but of the whole neighbourhood, lies in the basement kitchen; and here is the point best worth considering about the London house. With us it is considered a matter of necessity, for the sake of easy service, to have the kitchen department on the same floor as the living rooms and the front door; but how much we suffer in consequence! The service rooms are pinched to the last degree yet without preventing the living rooms from being pinched too. The kitchen must, except on a prohibitive scale of cost for land, share the best floor with the best rooms; intrude a perceptible presence among them; and condition their arrangement and lighting. In other words the family suffer in order to give advantage to the servants. What is this advantage? It is not an all around advantage. Cramped quarters are no gain to the servants, nor are they any happier for being so close to the living rooms. It is chiefly for convenient communication with the dining room and the front door that the kitchen department is placed on the ground floor; and the insertion on the ground floor of a serving pantry, with a sink and with cupboards for china and glass, fairly meets this necessity; for the maid, whose duty it is to attend to the front door during most of the day, will have her special quarters in this pantry. If ease of service for the dining room and front door is met in this way, the balance of advantage seems to be in favor of a basement kitchen, merely from the servants' point of view; for there will be ample quarters, isolated and distinct, and comfortable in summer as well as in winter. We are apt to think of a basement as a damp and dreary place; and so they are in houses where the basement is not used, and is not built for use; but these high, airy and dry English basements are quite another thing, and indeed it is more sanitary for the rest of the house that the cellar should be kept warm and dry by being occupied. But the great gain is in point of beauty and cost; larger rooms on the ground floor for the same money, and every room with a free look out.

It is in the matter of look out that the London house is such a useful study of how to make the most of a town lot. It is not an individual work; all the houses in the block must be planned with the same idea: If the custom is not already established it is a case for building restrictions; and in the borough of Kensington, where the house before us is situated, the law comes in also forbidding the drying of clothes in gardens. The result is a block of buildings as in Fig 4.

The kitchens are all invisible and there are no back yards—except in the American sense of ornamental ground. Ashes and rubbish are placed in two large cans which have a place of their own, outside in the kitchen area of every house, where they are concealed from view, but readily accessible to the dustman on his rounds. Rag and bottle men and all kinds of waste

FIG 4 VIEW C PLAN OF BLOCK



users also thrive in London. The result is a clear area, on both sides of the house, which is devoted to trees, shrubs and flowers in borders, and either paved or tamped hard with London red earth mixed with gravel. The street fence is a low wall, usually of brick plain or stuccoed and painted like the house. The divisions inside the lot are often of inconspicuous iron. Sometimes there is a stone or terra cotta balustrade on top. An interesting feature is the gate which rises up between posts, no matter how low the wall is, and is

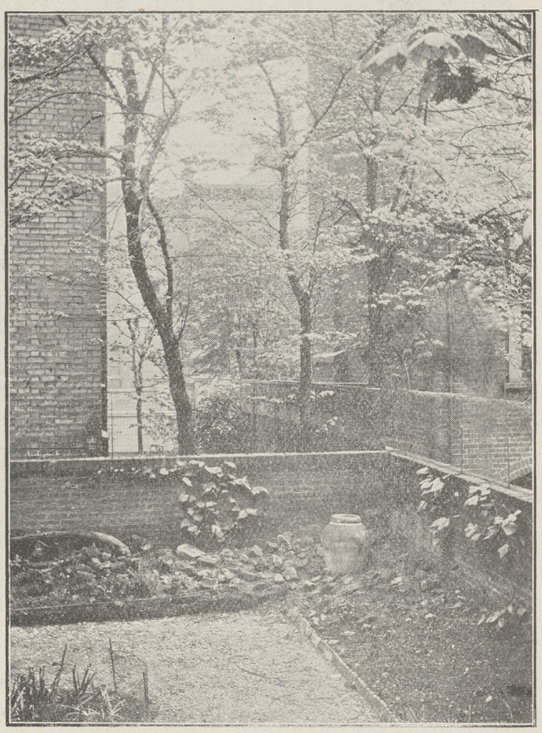


FIG. 5.—VIEW FROM DRAWING ROOM WINDOW.

more often than not a solid door. Sometimes this door is kept shut and can be opened from the house when the bell is rung. The bell pulls are usually in any case in the gate post, in beautifully kept brass; there are a pair,

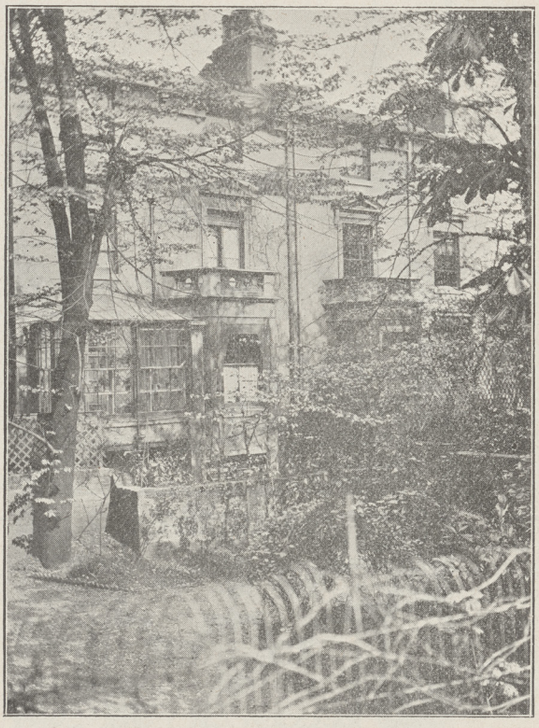


FIG. 6.—FROM DRAWING ROOM BAY WINDOW.

one labelled "visitors" and one "tradesmen" so that the servant within knows whether to go to the door upstairs or downstairs.

W. A. LANGTON.

RELATIVE COST OF DOING WORK IN WINTER AND SUMMER.

A difference of opinion seems to exist among architects and builders as to whether the inside work on a building can be done more cheaply in winter than in summer, and whether a contractor is justified in submitting lower tenders for such work to be done in winter. The arguments pro and con will be found in the following letters recently received from representative architects and contractors throughout Canada :

TORONTO, April 29th, 1903.

I consider the contractor is justified in submitting a lower tender for work on a building to be executed in the winter season. At the same time my experience and observation has been that a client who is obliged to pay for caretaker and for fuel during the construction, also for loss of interest on the work, does not save anything thereby. My advice in future will be for my client to make as early a start as possible in the Spring, and excepting strikes, I think that his work would cost less and he would be farther ahead by the end of the season.

GEO. W. GOUINLOCK.

TORONTO, April 30th, 1903.

With respect to plastering in winter or summer months would say that the extra cost for plastering in winter as against summer is about 2 per cent., but occasionally a contractor being slack and wanting to keep his men employed will cut the figure a little for that particular purpose. This does not include furnishing heat which would still add about 4 per cent.

J. M. GANDER.

MONTREAL, April 30th, 1903.

As to the comparative advantage of doing inside iron work in winter or summer, we may say that according to our experience there is very little difference. There may be an apparent difference in lower wages in the winter, but taking the cold into account, which frequently prevents men from doing their best, and the cost of heating, which is a large item, it brings the cost of producing the work up to the highest summer level. In summer wages are somewhat higher, but the conditions are more favorable for doing work, and men will accomplish more than in the winter ; therefore we consider that there is no difference from point of cost in either winter or summer.

H. R. IVES & CO.

MONTREAL, April 30th, 1903.

As a result of an experience of sixteen years in the business, I am prepared to say that inside work on buildings of the fireproof class can be done cheaper in winter than in summer, and as far as terra cotta fireproofing is concerned, the winter job is both better and cheaper.

And I have every reason to say that terra cotta fireproof arches, and partitions that are built in winter with a reasonable amount of care are certainly stronger and better in every sense than if the same class of work was done in summer time especially if the terra cotta blocks are kept dry. I claim that there is a better unity between the cement mortar and the blocks than could possibly be obtained in the summer time. I claim this from the reason that the arches in the roof of the Royal Electric Sub-Station in Montreal were placed in position in the month of February 1902 and the plasterers plastered the ceiling in March—the following month—the said roof was about 60 ft. in the clear above the ground floor and the contractor experienced no difficulty whatever. And also the floor arches, the roof, the partitions, etc., of the Guardian building of this city were placed in position between October and February and no doubt the workmen made a better average per nine hours day, and the work is certainly better than could be obtained if it had been done in the summer.

N. T. GAGNON

LONDON, ONT., April 30th, 1903.

With reference to difference in the cost of doing the inside work on a building in winter and summer, would say my opinion, from past experience, is that the work can be done more cheaply in summer for several seasons. In the first place it is necessary to keep fires going to keep the building warm in winter, and we have found that this occupies a considerable portion of the time of at least one man. The fire would invariably be allowed to go out during the night, and have to be put on fresh in the morning, which would mean that the house would be too cold for working for perhaps an hour or more. In addition to this the days being much shorter in winter, it is often impossible for the workmen to see the work properly after 4.30 in the afternoon, whereas in summer there is no objection of this kind. Of course the wages paid are the same per hour summer or winter, so there is no difference in that respect.

S. STEVELY.

LONDON, ONT., April 30th, 1903.

Replying to yours of the 29th, I would say no, the inside work on a building cannot be done more cheaply in winter than in summer, because labor costs the same in winter as in summer. From my own experience, at times I have taken work lower in winter to keep my men employed.

Regarding finishing a house in winter I think the work is much better done, and more satisfactory to the proprietor, as the building must be heated, which dries out the timbers, and with our present heating system greater care has to be taken to prevent shrinkage. A good house I always recommend to be finished in the winter.

WM. TYTLER.

MONTREAL, May 1st, 1903.

I cannot see the economy there may be, in doing inside work in winter instead of summer. Inside work may be considered to be : Plaster work, joinery, painting and glazing, plumbing, gas, electricity, heating.

Plumbing, gas, electricity, heating could be done any time and the quality may not suffer thereby. As to strict economy I don't believe there is any, as working hours are shorter in winter than summer and the wages are as high in winter as summer. It is very well known, at least here in Montreal, that although plaster work is done all through winter, it does not give so good a job and the expense for heating while the work goes on must be added to the regular price.

And should working hours apply just as well to that trade as to others :

As to joinery work, short hours apply, and to have real good work heating must be used, consequently adding to the expense —I don't believe there is any aconomy on that head. Painting, although not so much affected as joinery from the cold and moist weather, is not I believe done more economically in winter than in summer. As a whole, winter work is a necessary evil, that's all.

JOS. VENNE, Architect.

MONTREAL, May 2nd, 1903.

In reply to your equiry I am of the opinion that the season is no factor in prices. Formerly it was so, when wages were lower in the winter.

WM. E. DORAN, Architect.

LONDON, ONT., May 1st, 1903.

My business it is all outside work and from 26 years experience I find that winter work does not pay unless I get more money for the work than I do in the summer.

JOHN WHITTAKER.

TORONTO, May 2nd, 1903.

Inside work I think, cannot be done with less cost to the contractor in winter than in summer, but it is frequently done I am sure with less cost to the owner, for the simple reason that the contractor, to keep things moving in slack time, takes work cheaper. Every architect is familiar with the carpenter's expression, "Well, we're not very busy now, and could do work cheaper than if left till spring." Whether a contractor is justified in submitting lower tenders in the winter than in summer depends on the facilities of the individual contractor. As the conditions under which the work is done in winter vary more than in summer some would be justified while others would not, in taking work cheaper.

HENRY SIMPSON.

TORONTO, May 2nd, 1903.

In answer to your question I would say that in my opinion work can be done more cheaply in summer at the present time. Some years ago during the dull times workmen were willing to

work for lower wages during the winter season and work could perhaps under those conditions bed one more cheaply, but those conditions do not prevail at present.

R. G. KIRBY.

MONTREAL, May 2nd, 1903.

My experience in over twelve years practice as an architect is that the inside work of a building can be done cheaper in winter than in summer. I believe the reason of this is, that the building operations are more active in summer than winter.

ALCIDE CHAUSSE.

QUEBEC, May 3rd, 1903.

Replying to your enquiry of April 29th, I beg to state that all things considered, I do not see how the inside finish of a building can be done cheaper in winter than in summer, the only difference in favor of the former being a slight increase in cost of labor, practically compensated for by the shortness of working hours and the extra cost and inefficiency of artificial light, to which must be added the cost of heating, which comes very high in an incomplete building. That is my own experience, and I hear it has been strictly confirmed by the experience of contractors on our new theatre, the Quebec Auditorium, where the cost of heating, even under normal fuel rates, would still have overeaten the saving on winter labor.

G. E. TANGUAY.

MONTREAL, May 5th, 1903.

Re price of summer vs. winter work, I would say that I would not be an authority on the question of inside work. With regard to our roofing, of course there is a heavy difference in cost, although we cannot obtain any better price for doing it. Our Montreal winter season's work costs us fully 20% more than the same work during the summer weather.

C. T. WILLIAMS.

TORONTO, May 5th, 1903.

I have always found that men working on buildings always work better during the summer than in the winter They enjoy the fine weather and are in better spirits, can keep their tools in better order. Material can be got in better, while on the other hand, no matter how comfortable a building may be enclosed during the winter, there is always a certain amount of running in and out, dampness in the building, the difficulty of getting to work on time in bad weather, all of which affects the men, and I have always found that I could do my work better and cheaper during the summer than winter and do not consider that any contractor is justified in taking contracts cheaper in winter, the wage question being equal.

H. MARTIN.

TORONTO, May 7th, 1903.

My experience has been that winter work is slightly cheaper. Wages in both seasons are the same, but mill work would be cheaper during the winter months, as the factories prefer to keep running on, taking work at low figures rather than stop machinery or lose good men; and the contractors also prefer to keep going for less returns in order to keep their men together. I prefer winter finishing; on account of the scarcity of work there is a chance to get the better class of mechanics, and the temporary heating of a building is preferable to finish in rather than the changeable atmosphere of summer. My experience has been, without exception, that interior work stands better when done during winter months, and under conditions that are most trying to such work, namely, when artificial heating is being used.

W. L. SYMONS.

MONTREAL, May 7th, 1903.

My experience is that with a climate like ours it is cheaper to do work on buildings in summer than in winter.

In winter buildings require to be heated to prevent water and steam pipes from freezing, also all plaster and mortar of all kinds has to be more closely looked after than in summer, and even if there were no water or steam pipes, plaster and mortar to freeze, the building not being heated there would be dampness which would cause lumber to twist and warp. I am of the opinion that all building trades require more attention in winter than in summer, therefore conclude, building operations are more expensive in winter than in summer.

JOHN WIGHTON.

VANCOUVER, May 5th, 1903.

The writer's experience is that winter finishing is more expensive than that done in summer. Heating, special care of the premises and waste of materials all have to be taken into account, also time for completion, interest on money in the event of the work being prolonged. Winter work means that painting or other branches will be delayed for spring, hence extra time is required. A contractor under certain circumstances might be able to figure lower for winter, especially if sub trades are done by contract and special reduction made to have work going on during the dull season. Over here in British Columbia we consider a contract requires a higher figure, but localities differ in this respect. My advice would be do everything possible during the summnr months, put on extra men aud rush the work—save time and save money.

E. COOK.

WINNIPEG, May 8th, 1903.

I consider it worth from 10 to 15% more to finish work in winter than in summer, besides getting a better job done in summer.

W. F. LEE.

MONTREAL, May 16th, 1903.

We know that in our line it costs less to do our work in the summer than it does in the winter. The long light days and the more comfortable climatic conditions are all in favor of summer work. It used to be the custom to reduce wages in the fall, which has probably given rise to the cheaper idea. But men now get as much per hour in winter as in summer.

J. W. HUGHES & SON.

VANCOUVER, B. C., May 7th, 1903.

Your enquiry of April 29th at hand. Will answer with few lines covering my observations for over twenty years—providing the wages paid per hour are the same in winter as in summer, I consider the work will cost at least fifteen per cent. more in winter than in summer, and in seven out of ten cases, the finished work does not give the satisfaction to owners or architects that the summer work would have given at the less cost. The imperfect light in most parts of the building for two to four hours each day (although men are only working from 7 to 8 hours daily), the imperfect heating and drying of most buildings, during finishing ; the extra amount of time required in cleaning and caring for the finishing materials are the chief contributors towards their extra cost. Under conditions favorable towards contractors, with an oversupply of labor to select help from (only the best of men will be used) and the men anxious to hold their positions by working well and doing good work the fifteen per cent. extra cost referred to might be reduced to about five per cent. or in some cases brought even with cost of summer work.

C. P. SHINDLER.

LONDON, ONT., May 11th, 1903.

Yours of April 23rd received and the contents considered by the Board of Directors at their last meeting. They were unanimously of the opinion that building contractors were not under any condition ever justified in submitting lower estimates for winter work. The lack of proper light and heat are of course the two principal hindrances to work being done as cheaply in winter, and added to that in some trades, particularly bricklayers and plasterers, is the very great waste attendant upon winter work.

GEO. S. GOULD,
Secretary, Builders' Exchange.

VICTORIA, B.C., May 6th, 1903.

My experience as a contractor teaches me that work cannot be done cheaper during the winter months, than the summer months. The material is in better condition to work in the summer and much more easily cleaned to a smooth surface. In this climate we have considerable rain during the winter months ; the atmosphere is damp and penetrating and buildings erected during the winter require fires to prevent dampness penetrating and swelling the inside finish. The dry saason has the advantage as to cost. We make no difference as to cost summer or winter.

H. C. MCKILLICAN.

SAN FRANCISCO, CAL., May 12th, 1903.

My opinion is very positive that work can be done inside building much cheaper in summer than winter in any

city in Canada. The climatic conditions in California, U.S.A., are such that it does not make much difference. In summer you have climate in your favour; your building is more accessable; it costs nothing for artificial drying; you have no frost to contend with and your men have no broken time. I know I was caught twice in winter time—once in Vancouver, B. C.—when building Molson's Bank the frost brought down the Bank ceiling, which was very expensive; this was four years ago; two years ago I was caught with Rossland Post Office in winter time, and in that case it cost over 25 per cent. more. Carpenter work likewise suffers as does also painters' as they are nearly always humbugged waiting for plastering, etc.

THOS. BRADBURY.

VICTORIA, B. C., May 11th, 1903.

We can do work cheaper in summer, as everything is dry and in much better condition. The only reason that we know could be advanced for cheaper winter work is that there is not usually round, so that wages are the same, but the dark days are no profitable, for even though the hours are reduced to from 8 a.m to 4 p.m., there are still days when it is too dark before quitting time. With all these items against us, contractors here figure no higher for inside work coming in winter, for the reason that it can be pushed along, whereas outside work at the same time may drag with uncertainty, carpenters at the best not averaging more than three quarters of the time outside, and bricklayers less during this period.

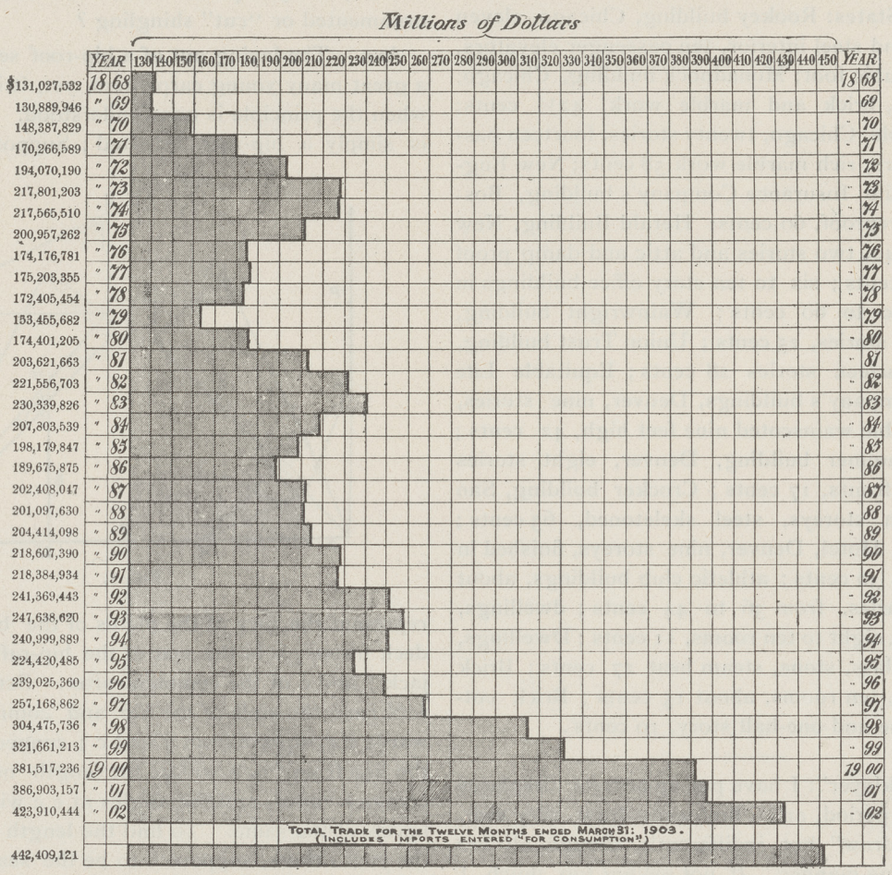
BAYNES & HORIE.

TORONTO, May 9th, 1903.

My opinion is, 1st, you cannot make the same progress ; 2nd, you cannot make the same job in winter as in summer. In winter it takes from 12 to 15 days to dry out the first coat of plastering before it is ready for the second coat, and that has to be done with furnaces, which means time and money that you have not to expend in summer. Also you have got to take into consideration waste of material in our line (plastering) which does not take

TOTAL TRADE OF THE DOMINION OF CANADA

FOR THE FISCAL YEARS ENDED JUNE 30TH, 1868 TO 1902.



as much doing in winter, and rather than be idle, sometimes work is taken cheaper.

E. W. WHITTINGTON.

VANCOUVER ,May 9th, 1903.

As far as our experience goes in this city, and we have been in the business for fifteen years, inside work costs slightly more and is not so satisfactory when done in winter—that is to say in the months of November, December, January and February.

1st. A striking feature of this climate is the dampness of these months, making it necessary to close in a building and provide heat ; where there is a furnace it is simple, but in many cases temporary stoves are needed; either way means more or less extra cost, risk from fire and disfiguring of walls with smoke, etc. 2nd. The plastering in nearly all cases is not properly set and consequently many more cuts and marks will occur in it which can never be made as good as the original. 3rd. Creat care has to be exercised in getting the finishing lumber on the job in fine weather, and even then sometimes it is caught on the road in a storm which makes trouble, sometimes having to be renewed. 4th. As to labor, there is a steady demand for good men the year place in summer. Therefore I fail to see how work can be done cheaper in winter than summer.

JNO. NELSON.

VANCOUVER, B. C., May 6th, 1903.

Re cost of inside work in summer v. winter. My experince is that there is very little difference. Where trade unions regulate the wages, making them the same per hour throughout the year as they generally do, I think the cost of inside work as well as outside work is greater in winter than in summer in our Country (Canada). There is more to contend with in several respects—such as bad light, too much moisture or frost, expense of heating and drying, difficulties in caring for materials. On the other hand a better grade of men can usually be obtained in the winter season; this is an advantage which almost makes up for the disadvantages, but not quite in my opinion.

A. E. CARTER.

TORONTO, May 19th, 1903.

My opinion is that the inside work of an ordinary building, whether residential or commercial, cannot be executed more cheaply in winter than in summer. My reasons for this opinion are : 1st,-Artificial heat must be provided; 2nd,-Workmen always do more and better work in the bright days of summer than in the dull days of winter.

J. W. SIDDALL.

INTERCOMMUNICATION.

Communications sent to this department must be addressed to the editor with the name and address of the sender attached not necessarily for publication. The editor does not hold himself responsible for the expressions or opinions of correspondents, but will, nevertheless, endeavor to secure correct replies to queries sent in. We do not guarantee answers to all queries, neither do we undertake to answer questions in issue following their appearance.]

From "Inquirer": Is it possible to tell what the King Edward Hotel, Toronto, cost, per cubic foot, measuring from foundation footings to top of roof; and if so, about how much per cubic foot did it cost?

ANS.—While we have no exact data at hand regarding the cost of King Edward Hotel, we are inclined to think, judging from a survey made of the building in a general way, that the cost would run up to close upon 32 cents per cubic foot. This is not given as the exact cost, but we are under the impression this figure is pretty nearly correct. We give herewith the cost per cubic foot of some well known buildings in various cities of the United States: Rookey building, Chicago, eleven stories, iron and steel interior, ten passenger elevators, 32 cents per cubic foot; Monadnock building, Chicago, sixteen stories, brick and marble work, 42½ cents; Masonic Temple, Chicago, twenty stories, fourteen passenger elevators, rich marble work 58 cents; New England Mutual Life Insurance Company's building, Boston, granite fireproof, 60 cents; Herald Building, New York, 200 x 140, two stories and attic and damp proof basement 46 cents; six to ten story office buildings in New York, 30 to 60 cents; Wainwright building, St. Louis, ten stories, 25 cents; Union Trust building, St. Louis, fourteen stories 28 cents; Equitable Life Insurance Company's buildings, Denver, nine stories, first story marble wainscoted nine feet high, 42 cents; Ernest & Crammer building, Denver, eight stories pressed brick fronts, 17 cents; Crocker building, San Francisco, ten storeys, steel skeletoned, 63 cents; Brown Palace Hotel, Denver, nine storeys, finished in iron and onyx, 30 cents; athletic club buildings, about 24 cents; libraries, from 36 to 44 cents; dwellings, Boston, frame, eight to ten rooms, 11 cents; Dwellings, Denver, first class, stone, steam heat 27 cents; Brick cottages, east, ten rooms, about 15 cents; Brick cottages, east, one and one-half story, 10 cents.

From "Bricklayer": I have put up several fireplaces within a short period, and I find some draw very well, while other "draw" but indifferently though all are built in the same manner. If not asking too much, I would like to have you give a few suggestions, showing the proper method of building a fire-place showing how to "throat" it and how to make it fairly fire-proof?

ANS.—We refer "Bricklayer" to an article on this subject published in another column of this issue.

From "Builder": I have a contract to repair and renovate an old brick house which is over seventy years old, and my main trouble is to freshen the walls outside so as to give them a lively look. How can this be done?

ANS.—The best way would be to paint the outside of the brickwork all over, with two or three coats of paint mixed with linseed oil. First give the whole work a coat of alabastine, having it the color desired; then when dry, go over the work with the oil paint. This makes a good job of the work, but it is, of course rather expensive. An old brick wall may be enlivened and renewed by this process: Remove any moldy green that may have accumulated by pouring over the bricks boiling water (not greasy) in which any vegetables have been cooked. Repeat for a few days, and the green will disappear. To prepare a red wash, melt one ounce of glue in a gallon of water, and while hot, add a piece of alum as large as a hen's egg, half a pound of Venetian red, and one pound of Spanish brown. If the color, upon trying this paint is found to be too light, add more brown and red; if too dark put in more water.

From "Nor-Westener": I am in want of information on two subjects, and I am sure the knowledge will be of great use to many readers of your esteemed journal, as well as myself. First, I would like if you would describe or show a good and easy method of laying out a hip-roof including the jack-rafters and backing? Second, will you please show a few cheap designs for ornamented or "cut" shingling?

ANS.—The laying out of a hip-roof seems to puzzle a great many young carpenters, yet, it is quite simple when the principle is once understood. A valley roof is simply a hip-roof inverted; Suppose p p Fig. 1

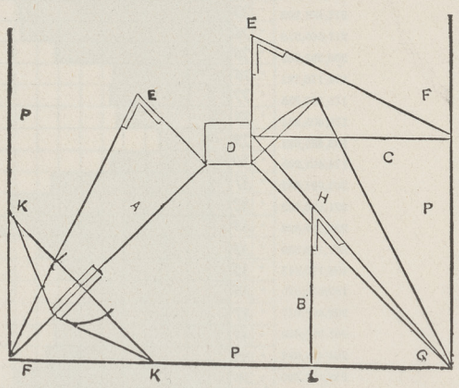


FIG. 1.

represent the face of the plates of the building; d the deck frame; a is the seat of the hip-rafter; b of the jack; and c of the common rafter. Set the rise of the roof from the ends of the hip and common rafter towards e e, square from a and c; connect f and e, then the line from f to e will be the length of the hip and common rafter, and the angles at e e will be the down bevels of the same. To find the length and bevel of the jack rafters, suppose b to be the seat of the rafter. Set the length of the hip from the corner g to the line on the face of the deck frame and joint it to the point at g. Extend the jack b to meet this line at h; then from i to h will be the length of the jack rafter, and the angle at h will be the top bevel of the same. The length of all the jacks is found in the same way, by extending them to meet the line h. The down bevel of the jacks is the same as that of the common rafter at é. A hip roof is a roof constructed of equally inclined planes rising to the same pitch and height, and a hip rafter is a rafter placed at the hips of the hip roof. Now if you wish to find the backing of a hip rafter, at any point on the seat of the hip a, draw a line at right angles a to a, extending to the face of the plates at kk; upon the points where the lines cross, draw the half circle just touching the line f e; connect the point at j, where the half circle cuts the line a, with the points kk; the angle formed at j will be the proper backing of the hip rafter. It is not worth while to

back the hip rafter unless the roof is one-quarter pitch or more. It is always desirable to have the hip rafters on a mitre line, so that the roof will all be the same pitch ; but when for some reason this cannot be done, the same rule is employed, but the jacks on each side of the hip are different lengths and bevels. We may explain here for the benefit of those who do not know what is meant by the term "jack rafter" that it is a short rafter extending from and joining to the hip rafter forming the corner framing of a hip roof. With regard to ornamented or cut shingling, the first thing to do will be to decide the width of the shingle you intend using ; generally, six inches is the width of the shingle employed, though shingles five, and sometimes four inches, are made use of. Shingles must be all made of the same width, only at the start, when a shingle half-width is used as shown in the illustration,

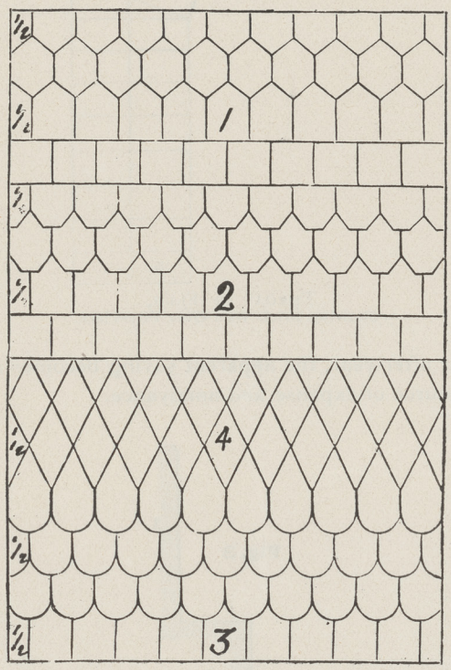


FIG. 2.

Fig. 2, in which are shown four styles of "cut" shingling. No. 1 shows a hexagonal pattern with one angle or lapping joint. No. 2 shows an octagon ended shingle. No. 3 shows semi-circular ended shingles while No. 4 shows a diamond or lozenge shaped end. All or any of these forms are easily made, and the manner of laying is shown in the illustration.

From "Carpenter": Will you kindly point out a ready way of laying out a bay window showing a portion of an octagon projection? In previous issues of the paper, there has been some reference to this subject, but not sufficient in my opinion to give a clear understanding of it. Any further information will be appreciated.

ANS.—Suppose AB, Fig. 3 represents the width of octagon. Divide the line AB, into 12 equal spaces as numbered from 1 to 12; from A set off 3½ spaces, and square out to C 3½ spaces, as shown; from B, set off 3½ spaces, and square out to D, as shown; connect A C, C D, and D B, as we have the sides of the octagon complete. This method is very simple and will be found very practical, especially in drawing floor plans of buildings having octagon bay-windows, ends or corners. Fig. 4 represents another method of drawing an octagon window or plan with an octagon end. Let AB, represent width of octagon. C, is the centre. Make AB, and BE, equal AC, and connect D E.

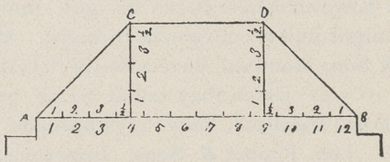


FIG. 3.

Draw the diagonals CD and CE. With C, as center and AC, as a radius, describe the arcs crossing the diagonals and locating the points F and G. Now with FD, as a radius, strike the semi-radius HI, and JK. Connect HI, and JK, across the diagonal, and the

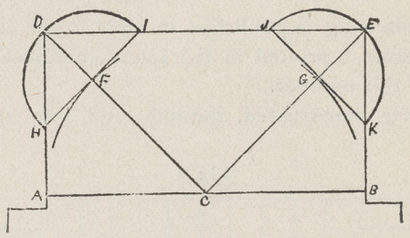


FIG. 4.

lines for the octagon are complete and as accurate as it is possible to make them. In conclusion it might be well to state that the figures on the steel square for laying out an octagon miter are 17 inches on the blade and 7 inches on the tongue. The tongue gives the cut.

From "Plasterer": Having some peculiar work to do, in which "staff" has to be used, and having but a hazy idea of what the material is composed, and not being able to find a full account of it in Miller's large book on plastering, I appeal to you for information for which I will be thankful?

ANS.—Staff was first brought into extensive use in the construction of the World's Fair buildings in Chicago, in 1891–93, although it has been used for a long period in Europe. As used in Chicago, it was made about as follows :· The ingredients are plaster of Paris, water and hemp fibre, the latter being used to bind and strengthen the cast. A suitable mold having been made, the hemp is cut into pieces about six or eight inches long, bunched loosely, dipped in a liquid, and placed in the mold in layers until the mold is full, each handful being interwoven with those previously laid, and pressed in so that the cast will be compact and uniform throughout. When the mold is filled, the surface is smoothed over by hand, and the cast is removed when set. About thirty-six hours are necessary for thorough drying in warm weather; in winter more time is required, and the cast should not be subjected to frost before it is dry. Staff may be nailed directly to rough boarding of a wooden building; if it is to be applied to a new brick structure, furring strips should be inserted in the brickwork. This material, while cheap and satisfactory for temporary structures, does not seem well adapted for permanent buildings, as it detoriates in course of time, owing to rapid changes o temperature.

A correspondent writes from Hanover, Ont. :—

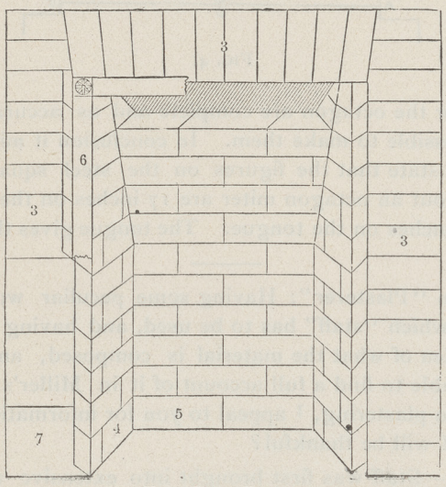
A month ago I received your communication with regard to a paper that could be pasted on glass, to give it the appearance of colored glass. I wrote to the Cloisonne Glass Company, London, Eng. and find that it is real glass ¼ inch thick that they sell. I have found out however where it can be got, and thought that you might find it convenient to know. Messrs. A. Ramsay & Son, Montreal, have a line of "crystographs" in sheets 16″x 21″ which they sell at $1.50 per dozen. C. C. Sharpe, Montreal, have "crystographs" 22″x 28″, 50c. each. Leo. Popper & Sons, Importers, Sullivan street, New York, have small pictures in sizes 8″ x 10″, 12″ x 12″, 12″ x 18″, etc., which are 75c. up to $2.50 each. They can also sell a running pattern at from 10c. to 15c. per square foot. This style comes in rolls containing 40 square feet.

CONSTRUCTION OF FIRE-PLACES.

The following is published in reply to the enquiry of "Bricklayer," printed in the intercommunication columns of this number.

Properly constructed, durable, and safe fire-places

Fig. 1



THE FIRE-PLACE,
Showing Tiles Placed Against Brick Backing.

should be built substantially as shown in the following illustrations. Fig 1 represents the fire-place, and shows the tiles placed against brick backing, (2). Number 6, the frame, as will be seen, should lap the tiles and the edge of fire brick, (4). The fire-brick (4), (5), should be laid flat, and a mortar-joint made of good bricklayer's mortar.

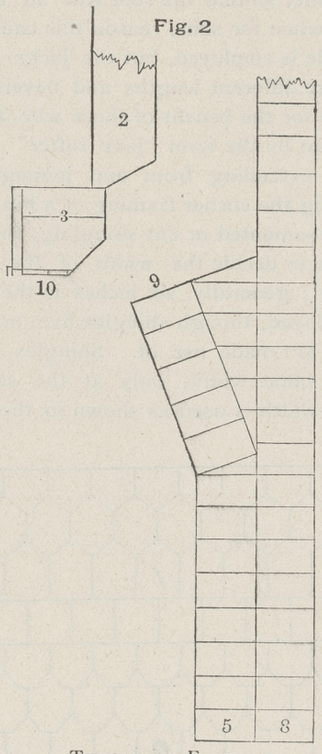
The common brick (3) back of tiles should be laid in mortar. The mortar should be spread over the entire surface, between bricks, and fill in between fire and common brick with bats and mortar to make smoke tight.

Fig. 2, showing section of fire-place, (2) shows face of chimney, (3) shows brick-work over fire-place supported by iron bars (10). No. (9) shows the throat of flue.

Fig 3, showing ground plan of fire-place and chimney. (1) is wall line; (2) is chimney breast; (3) common brick; (4) and (5), fire brick laid flat; the fire-brick when laid on edge make a job that is very unstable, the brick when heated being easily broken or knocked loose by a careless person or by any one striking them with a poker in poking the fire.

The only excuse for setting fire-brick on edge is that a few cents may be saved. But when repairs are paid

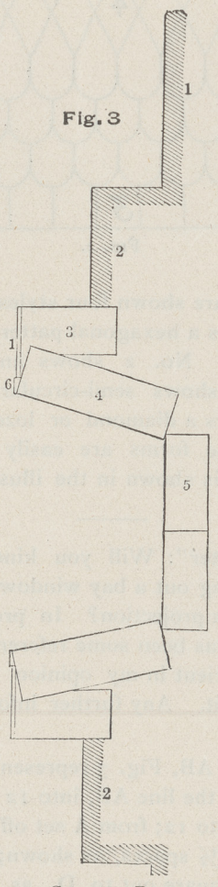
Fig. 2



THROAT OF FLUE,
Showing Brick Wall Over Fire-Place.

for year after year, the apparent saving becomes a constant source of expense and annoyance.

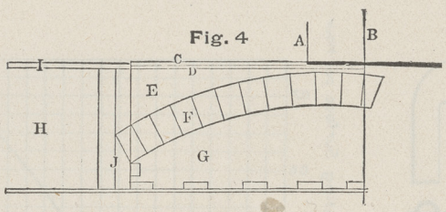
Fig. 3



GROUND PLAN,
Showing Fire Brick Laid Flat.

Showing the only safe way to prepare for a fire-place foundation. This rests entirely on brick (F), and has an

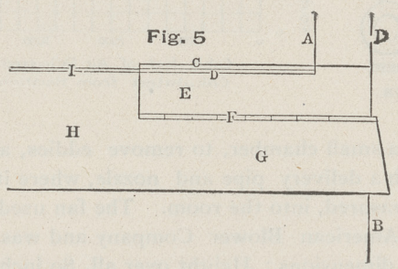
air space (G) under the brick arch. Over brick arch a concrete (E) of gravel, sand and cement should be put in, level-off at a sufficient distance below level of floor to admit of the cement (D) and tile hearth (C) to be placed. (I) in Fig. 4 represents floor (H) is the joist



FIRE-PLACE FOUNDATION,
Showing the only Safe Method of Making the Same.

and (J) the header, which should be twenty-four inches from plaster face of chimney (B).

Fig. 5 illustrates the vicious, but common way of repairing to support the fire-place and hearth. This is one which causes, on a low estimate, one hundred fires in United States and Canada every month during the winter. In this cut the joist (G) is shown running under the fire-place and resting on the wall (B); it is cut down a few inches; boards (F) are nailed on and a course of brick (E) laid on them; on these brick a course of sand



DANGEROUS SUPPORT FOR FIRE-PLACES,
Showing Defects and the Cause of Much Loss from Fires.

andc ement is usually laid and the cement and tiles laid on top. If the boards (F), being wet and swelled when brick and mortar are put on, dry out gradually, shrinking and opening cracks in joints between brick and through cement, and loosening the tiles, heat readily strikes down through the cracks and chars the boards and soon the wood becomes like tinder and ignites.

If all fire-places were built as in Fig 4 there would be almost a total freedom from fires from defective construction or criminal heedlessness or stupidity.

TAKING STAINS OUT OF BRICKS.—For removing effloresence, the white powder that comes out of brick, the Painters' Magazine advises to sponge the bricks with a mixture of equal parts of hydrochloric acid and water, let it dry and then wash with clear water, but let them dry thoroughly before painting. If the stains are from oil paint or oil stain, mix two parts whiting, one part soft soap and one part potash to a paste with boiling water, apply this paste in heavy layers to the stained parts and let it remain a few hours, remove the dried paste and clean the bricks first with soap and water, then with clear water.

In reply to a correspondent who asked what material should be used as a binder for Portland cement that is to be employed as a size in paint form on walls of brick, concrete or stone, a recent issue of Headquarters has the following: The cement is mixed with water, to which is added a portion of lime water and salt. The proper proportions are: One pint of lime water to 7 pints of soft water and 2 ounces of salt. Enough cement is stirred in to make a paint of such consistency that it may be spread conveniently with a wall brush. If coloring is desired, add hematite red in powdered form for red, hematite brown for brown, yellow ochre for buff and whiting for gray or slate color. Very good for new or damp walls.

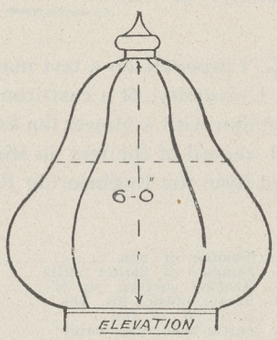
COVERING TURRET WITH LEAD.

In reply to a correspondent of the English Plumber and Decorator Mr. J. Wright Clarke writes:

With a roof as shown by the figure there is always a difficulty in making the lead rolls on the intersections water-tight especially on the lower parts. To make a really good job it is advisable to have seam, instead of wood rolls; and to prevent the lead bagging between the rolls it will be necessary to have secret tacks soldered on the backs of the bays, the tacks to be nailed to countersinkings in the woodwork as the bay is unrolled in its position.

The bay can be covered in either one or two pieces, as the total length is not very great. If two pieces are used the horizontal laps should miss each other, or unsightly bumps will show on the roll by having several thicknesses in one place. The bays should be cut to exact size with over-and under-clock margins, which should be folded inward and then dressed flat, the bays then to be placed in position and the folded sides worked up to form the rolls.

If secret tacks are used, the lead, after folding down the edges to be turned over the rolls, should have the tacks sweated on the bank-side and bent to the shape of the roof, and loose end left for nailing the lead to be then turned face-side upwards and rolled up lengthwise from the top to the bottom. The piece should be then



placed in position and the tacks nailed, using copper nails, as the bay is being unrolled. It is advisable to srut the lower portion of the lead bays to hold them tight to the roof until the rolls have been turned.

The only safe way to obtain a perfectly harmonious contrast in colours is to apply them, when mixed to the actual position they are to occupy when the scheme of decoration is completed. A series of colours that may look very well indeed when used in a dimly lighted room will often appear very objectionable when exposed to a brilliant light.

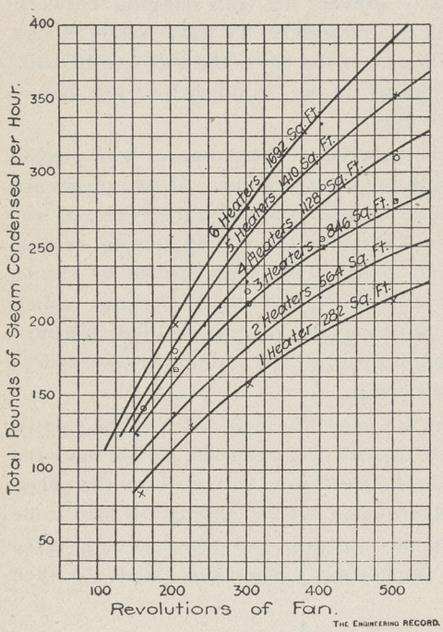
Ordinary paints, when coated on any heated surface, as boiler chimneys, smoke-boxes, cylinder ends, usually blister and fall from the work. The following preparations, according to the Painters and Decorators' Magazine, will be found very efficient for this class of work:—Procure 3 lbs. lampblack, 3 lbs. blacklead, 1 lb. black oxide of magnese, 1 pint japan gold size, half-pint turpentine, and 1 pint boiled linseed oil. Powder the blacklead and mix all the ingredients well together to a uniform consistency, and apply two coats as ordinary paints. This preparation will be found very durable, and will not turn white or grey when exposed to excessive heat, the same as ordinary black paints. Procure 2 lbs. black oxide of magnese, 3 lbs. blacklead, 9 lbs. terra alba. Mix well together and pass through a fine sieve, then mix to the required consistency with the following preparation:—10 parts silicate of soda (soluble glass), 1 part glucose, 4 parts water, This may be used in a similar manner to the above. It is invaluable to ship and locomotive painters.

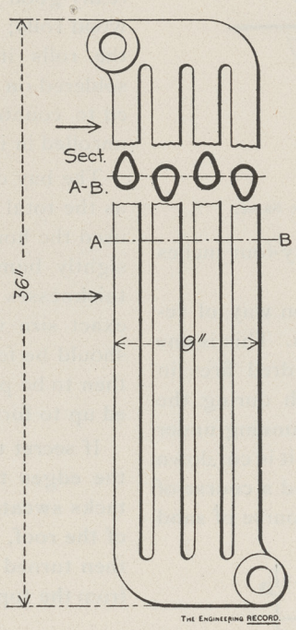
TEST OF A CAST-IRON HEATING SURFACE IN CONNECTION WITH A FAN SYSTEM OF HEATING.

At the ninth annual meeting of the American Society of Heating and Ventilating Engineers a paper was read by Prof. R. C. Carpenter on a test made at Sibley College, Cornell University, of a cast-iron heating surface used in connection with a blower fan for heating the air. The data and record of the test in slightly condensed form reprinted from the Engineeridg Record, are given herewith: The heating system was arranged specially for the experiment by the American Radiator Company and consisted of twelve radiators placed side by side in two rows of six each, one row above the other and extending parallel to the flow of the air. Each radiator was composed of 21 sections, each of which was a single casting 9 x 36 inches, in the form of four nearly triangular tubes, slightly staggered, with half-inch air spaces between the tubes, all as shown in the accompanying sketch. Each section has a surface of 6.7 square feet giving a total for the whole heater of 1,692 square feet.

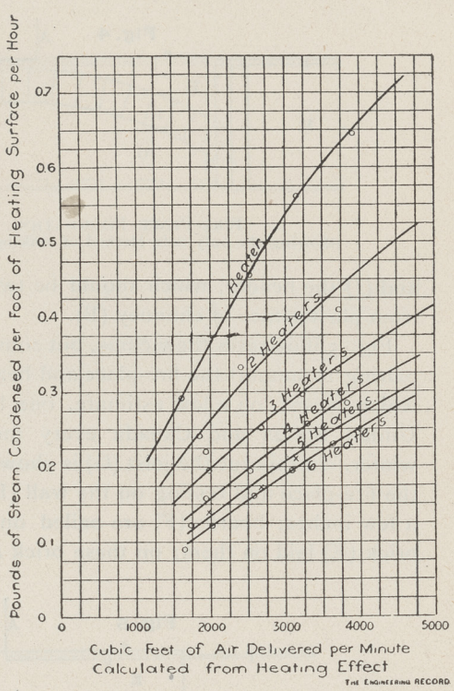
The fan drew the air over the heater and discharged it into a small chamber, to remove eddies, and thence through a delivery pipe and nozzle, where its velocity was measured, into the room. The fan used was made by the American Blower Company and was of the following dimensions: Height over all, 80 inches; diameter of wheel, 48 inches; width at periphery, 17.5 inches; inlet diameter, 30 inches; outlet, 27 x 27 inches. The fan was driven by a 6 x 6 inch vertical engine and was arranged to run at different speeds. The individual radiators were controlled independently so that it was possible to make tests with different amounts of heating surface.

The general results of the test are shown in the





Sketch of Heater Section.



RESULT OF TESTS.

a. Number of run	1	3	5	6	8	10	11	
b. Number of heater units	1	1	1	2	2	2	3	
c. Heating surface, sq. ft.	282.	282.	282.	564.	564.	564.	846.	
d. Steam press., lbs. abs.	24.69	24.81	24.81	24.69	24.87	24.77	24.81	
e. R. P. M. of fan	161.	303.	500.8	155.4	304.1	501.5	205.3	
f. Static head, ins. water	0.207	0.797	2.294	0.203	0.774	2.21	.314	
g. H.-P. consumed by fan	0.387	1.182	4.178	.0997	1.122	4.17	.3269	
h. Vel. disch. head, ins. water	0.184	0.780	2.29	0.193	0.763	2.18	.291	
i. Steam per sq. ft. heat. sur. per hr., lbs.	0.293	0.561	0.721	0.22	0.334	0.408	0.196	
j. Temp. air received	73.6	73.4	72.3	81.0	81.	83.0	74.1	
k. Temp. air delivered	125.1	124.6	118.8	143.7	150.4	146.1	158.9	
l. Rise in temp. of air	51.5	51.2	46.5	62.7	79.4	63.1	84.8	
m. Temp. water leaving coils	211.7	189.4	186.7	215.6	205.	209.	207.4	
n. Wt. of air disch. per min, lbs.	109.	214.	318.	132.	163.	253.	134.	
o. B. T. U. per sq. ft. heat. sur. per hr.	285.3	556.	750.	208.5	325.	397.	190.5	
p. Air disch., ft. per min., meas.	1992.	3529.	5813.	2015.	2530.	5900.	2473.	
q. Air enter'g coils, ft. per min., meas.	234.	412.	683.	233.	401.	675.	273.5	
r. Cu. ft. air per min., calc	1605.	3150.	4700.	1940.	2400.	3720.	1970.	
s. Ratio of expansion of air	1.095	1.097	1.090	1.116	1.128	1.120	1.159	

RESULT OF TESTS.—(Continued.)

a...	12	14	15	17	19	20	21	23	24	26	28
b...	3	3	4	4	4	5	5	5	6	6	6
c...	846.	846.	1128.	1128.	1128.	1410.	1410.	1410.	1692.	1692.	1692.
d...	24.81	24.81	24.69	24.75	24.47	24.84	24.75	24.79	24.69	24.77	24.77
e...	302.	502.	159.6	301.5	502.4	203.	304.	501.	154.1	302.08	493.
f...	.746	2.167	0.173	0.733	2.08	0.32	0.74	2.07	0.197	0.743	2.08
g...	.864	3.774	.2249	1.003	4.12	.367	.778	3.38	..	..	..
h...	.733	2.15	0.167	0.724	2.05	0.28	0.72	2.04	0.193	0.718	2.04
i...	0.251	0.33	0.123	0.195	0.284	0.140	0.174	0.25	0.09	0.163	0.232
j...	79.1	86.2	80.0	83.9	80.0	69.9	86.6	91.4	84.4	77.0	74.0
k...	159.1	160.3	159.4	169.4	164.4	172.3	177.6	177.8	174.1	182.3	179.2
l...	80.0	74.1	79.4	85.5	84.4	102.6	91.	86.4	89.7	105.3	105.2
m...	206.3	203.4	219.6	203.9	203.	199.6	204.2	216.4	216.2	215.1	212.3
n...	182.	257.	119.	175.	265.	136.	186.	275.	114.	177.	250.
o...	237.8	322.8	118.8	190.5	276.5	137.3	170.5	240.	862.	156.4	223.
p...	3560.	5890.	1992.	3500.	5960.	2518.	3570.	5980.	2022.	3560.	5960.
q...	398.	666.5	221.	389.	662.5	270.5	393.5	663.5	222.	382.	640.
r...	2680.	3710.	1730.	2520.	3830.	1960.	2690.	3980.	1650.	2560.	3610.
s...	1.150	1.134	1.148	1.157	1.156	1.198	1.164	1.158	1.168	1.196	1.198

accompanying table, which contains a selection of eighteen runs from the twenty-eight as given with the report. Three runs at different speeds are given for each of the six different amounts of heating surface used, each amount representing a unit consisting of two superimposed radiators. The diagrams herewith show the relation between the speed of the fan and the pounds of steam condensed per hour for different amounts of heating surface ; and the relation between the pounds of steam condensed per square foot of heating surface per hour and the cubic feet of air discharged per minute by the fan, for different amounts of heating surface. These curves show at a glance the proportionate decrease in the benefit derived as more heaters are added. In the discussion following the paper Prof. Carpenter stated tnat beyond 16 pipes, or in this case four heaters, the advantage gained was slight.

Three other diagrams presented with the paper but not given here, show the relation between the steam condensed for different speeds of the fan ; the relation between the temperatures of the entering and discharge air ; and the relation between the speed of the fan and the steam condensed per square foot of surface per hour, for different amounts of heating surface. The author was assisted in the test by Messrs. Neave and Cazenove, graduate students in the University.

DEMAND FOR ROOFING SLATES.

Mr. Harrison Watson, Curator of the Canadian section of the Imperial Institute, London, Eng., has written to the Department of Trade and Commerce at Ottawa, regarding a possible market for Canadian roofing slate. He says :

Quite recently a favorable opportunity for developing trade in an article which Canada possesses to a considerable degree has come to my notice. There is in the United Kingdom a very large consumption of roofing slates, many of which are imported. At a time when roofing slates were practically not used in the United States, the quality of slate deposits in that country was so suitable that several quarries were developed and worked solely for export purposes. In 1896 the slate trade with the United Kingdom amounted to some 46 million slates. Gradually, however, the utilization of roofing slates in building operations in America has been adopted, and between the domestic demands and the consequent increase in prices demanded by American slate producers, this export trade has steadily fallen away until at the present time it has almost ceased. Welsh slates, owing to labor troubles, have been also scarce, and United Kingdom buyers have been obliged to look temporarily to France for supplies. The French slate is inferior to American but is cheaper. A company which has developed and established the trade in American slates in Great Britain applied to me for information as to the possibilities of being able to secure suitable supplies from Canada. Upon inspection of a number of sambles of roofing slates from Canadian deposits, the expert informs me that the quality of the Canadian slate is very good and equal to, if not better than, the average American. The company, therefore, st ite that if they can arrange for regular supplies of the quality equal to that examined by them, they are prepared to contract for large quantities for which they would pay cash.

Provided that further investigation confirms the impression that large deposits of a suitable quality of roofing slate exist in Canada only awaiting development, the establishment of the industry would appear to offer a most profitable investment for capital which will, it is hoped, appeal to Canadian enterprise. The sizes most in demand here are 24″ x 12″, 22″ x 12″, 22″ x 11″, 20″ x 12″, 20″ x 10″, 18″ x 12″, 18″ x 10″, 18″ x 9″, 16″ x 12″, 16″ x 10″, 16″ x 9″, 16″ x 8″. They should measure 18 to 19 inches per 100 slates piled up in the flat. Qnarrying is a fairly simple matter, the cost of the necessary equipment being less than in connection with most kinds of mining. As to labor, it is pointed out that a large number of experienced slate workers are at present idle owing to labor troubles in this country, and many would readily go to Canada for reasonable wages.

BY THE WAY.

Mr. Chas. Baillarge, the well known engineer and architect, of Quebec has had printed in pamphlet form his interesting paper presented recently before the Royal Society of Canada on "The Construction of an Indestructible Vessel for a Voyage to the North Pole, and How to Reach it." Accompanying the paper is a map of the polar regions showing recent Arctic discoveries and plans for an indestructible vessel.

× × ×

Some of the ancient monuments in English cemeteries bear quaint epitaphs, complimentary and otherwise, to the departed. Here is one from a tombstone at Awliscombe, Devonshire :

"Here lie the remains of James Pady, Brickmaker,
late of this parish, in hopes that his clay may be
remoulded in a workmanlike manner
far superior to
his former perishable materials,—
Keep death and judgment always in your eye,
Or else the devil off with you will fly,
And in his kiln with brimstone ever fry,
If you neglect the narrow road to seek,
Christ will reject you, like a half-burnt brick.'

NOTES.

So far as experimental results now available indicate it would appear that in order to attain impermeability in concrete, whether of gravel or of broken stone, that the mortar mixture must be at least as rich as 1 cement to 2 sand, or 1 cement to 2.5 sand, the proportion of mortar being sufficient to fill entirely the voids, or possibly a little more than that in order to provide for inequalities of mixing in different portions of the mass. Although apparently mortar of 1 cement to 3 sand has occasionally been found impermeable under as high pressure as 40 pounds per square inch, there is little evidence that such a mixture can in general be relied upon. In addition to the importance of these matters of composition to be employed for a permeable concrete, it is undoubtedly also of essential importance that the concrete should be kept thoroughly moistened during the entire period of setting; otherwise not only the ultimate resistance may be impaired, but also the impermeability by the slight contraction of setting in air which has been observed repeatedly. This has a marked influence upon the use of concrete in the walls of buildings, which in their subsequent experience may be exposed to driving rain storms, against which ordinary walls of masonry have frequently been found ineffective.

When an advertiser complains that his advertisement does not interest the readers of a paper, he might do better to change his ad writer than to change his paper. The public is anxious always to be interested, and if the advertisement fails to do it the fault probably lies with the advertisement and not with the public or the newspaper.—Printers' Ink.

—THE—

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NOTES.

The tenders for certain work proposed to be done at Harboard street Collegiate Institute, Toronto, in comparison with tenders taken for similar work in 1898, were as follows:—

Plumbing	$1,685	$3,475
Masonry	382	1,800
Carpentering	365	707
Painting, etc.	90	129
	$2,632	$6,111

AN ARCHITECTURAL ALPHABET.

A was for architect, old in his prime,
B was a builder who took his own time.
C was a client who had his own views,
D was the details that no one would use.
E the erection he tried to excuse,
G was the ground plan exceeding the site,
H was the half-timber he had to reveal,
I was the ironwork he had to conceal.
J was the joinery, mostly of deal.
K was the king-post that ought to have stood,
L the stone lintel that proved to be wood.
M was the mullion that blocked out the light.
N was the newel too thin for its height.
O the oak sill that was not water-tight.
P was the price on the contract agreed,
Q was the quantities down to a bead.
R was the rage that the client displayed ; and
S the sarcastic remarks that he made—when
T was the total that had to be paid.
U was the umpire called on to decide.
V was the value the client denied.
W stands for the words that he said,
X was the xtras for which he was bled,
Y Z the young zealot who wished he was dead.

You might as well try to conduct a business without advertising as to operate machinery without oil.—Printers' Ink.

"Book of 100 Stained Houses" is the title of a new publication by Mr. Samuel Cabot, of Boston. It contains illustrations of houses on which Cabot's creosote stains have been used and unsolicited testimonials as to their value.

Wallpaper of special design for the children's room continues to receive attention from the makers. A recent suggestion is wallpaper panels. They are about 12in. by 36in., and are shown in broad poster designs of life-size duck mothers leading a fuzzy yellow brood to a brook, fox terriers pursuing a red and black rooster, and apparently overtaking him, and processions of beggars coming to town. There are also posters of children going to bed, saying their prayers, eating their breakfasts, or playing. They are artistic, durable, and useful, as inculating a love of art and the beautiful.

A FIFTEEN-STOREY CONCRETE BUILDING.

A building fifteen storeys high, about 210 feet, in which concrete and steel will form the walls, is about to be erected in Cincinnati. The building inspector, who has to authorize the work, appears to have felt his responsibility in approving of the experiment, and an enquiry was held by him on the subject. It was explained that the concrete construction proposed was stronger and more rigid than steel, and will stand the vibrations and strains due to wind pressure better and in a more perfect way. The strength of the structure does not depend on rivetted joints, but on the monolithic character of the concrete, being all one solid mass of stone held together by twisted steel rods and imparting to it an elasticity equivalent to that of a steel building. The architects of the building are Messrs. A. O. Elzner & George M. Anderson, and the structure will be erected by the Cincinnati Fireproof Company. The building inspector of Philadelphia states that he has had a similar structure under his consideration, and that he had resolved to interpose no obstacle for its erection.

Composition capitals are now being used very largely in Canada. The Detroit Decorative Supply Company are large manufacturers of relief ornaments, staff work, architectural carving and modelling. Their exterior and interior composition ornaments are highly spoken of by architects and builders all over the Continent. The large works of this company turn out this class of goods in a particularly neat manner. They will be pleased to send their new illustrated catalogue to all mentioning this journal and addressing 812 14th avenue, Detroit, Mich.

A new building by-law adopted by the suburban municipality of St. Louis, near Montreal, provides that all new buildings on St. Lawrence street must be of pressed brick or stone and three storeys high at least; they are also to be built on the line of the street. It is expected that a regularity in design and construction will thus be brought about in the great number of business and residential buildings which are to be erected when the land for widening the street has been expropriated. In the new residential streets to be opened up the houses are to be built ten feet back from the line of the street.

NOTES.

If these people with German names who are threatening us with bricks of sand and lime can manage to give us some with a porous or cellular, lava-like structure—like the porous terra cotta, only much more so—we can use them to advantage in many situations as heat-savers. Some one may yet produce bricks of this cellular quality, but of material so hard and glassy as to be impervious to storm and grime. Imagination finds but a step from this to a brick for light outer walls that shall havo the further quality of translucence ; but imagination can hardly enumerate half the uses that would be found for such a building material.

NOTES.

A great deal of the furniture and interior wood work now being finished is not varnished, but given a dull effect; this can be obtained by giving the work after filling an application of the Old Dutch Finish made by The Bridgeport Wood Finishing Co., New Milford, Ct., New York, Chicago and Philadelphia. This firm also has the latest stains in Golden Oak, Weathered Oak, Forest Green, Mahogany &c., and would be pleased to give full information.

Mr. E. G. Acheson has recently been conducing some interesting work with clay earth, and has obtained a product called "Egyptianized Clay." This is obtained by a very simple treatment with tannins or similar extracts of vegetable matter whereby the clay is rendered very much higher in tensile strength, more dense, and the shrinkage is materially reduced. To obtain this same effect was probably the real object of the use of straw by the Egyptians. This having occured to Mr. Acheson, he extracted the soluble matters from the straw, throwing away the fibre, and by treating the clay with these soluble constituents obtained the above mentioned results. The tensile strength was increased as much as 350 per cent. in the sun-dried article.

PERSONAL.

Mr. Kivas Tully, the veteran civil engineer and architect of the Ontario Public Works Department, has had conferred on him by the British Government the Imperial Service Order.

The death is announced of Mr. Bruce Price of New York, the well known architect, who was the designer of the Windsor Street Passenger Depot of the C. P. R. in Montreal and the Chateau Frontenac Hotel, Quebec.

Mr. Henry F. Duck, civil engineer and architect, of Toronto, has been appointed general manager for great Britain for Milliken Bros., civil engineers and contractors, of New York. Mr. Duck is now en route to Great Britain to assume his duties. He carries with him the best wishes for success of numerous professional and other friends in Canada.

BUSINESS NOTES.

The Bridgeport Wood Finishing Company, of New Milford, Ct., New York, Philadelphia and Chicago is exhibiting its Wheeler patent wood filler, stains and other specialties at the Osaka Exposition, Osaka, Japan, and has just received word from its representative there that the Emperor of Japan was his guest at the exhibit on the day of the opening ceremonies.

British Trade Supplement

The Publishers of **"The Canadian Architect and Builder"** have arranged to furnish information respecting British Exporters of Building Materials and their goods advertised in this paper, and will keep on file at their Offices, Imperial Building, Montreal, and Confederation Life Building, Toronto, **Catalogues, Price Lists, Etc.**

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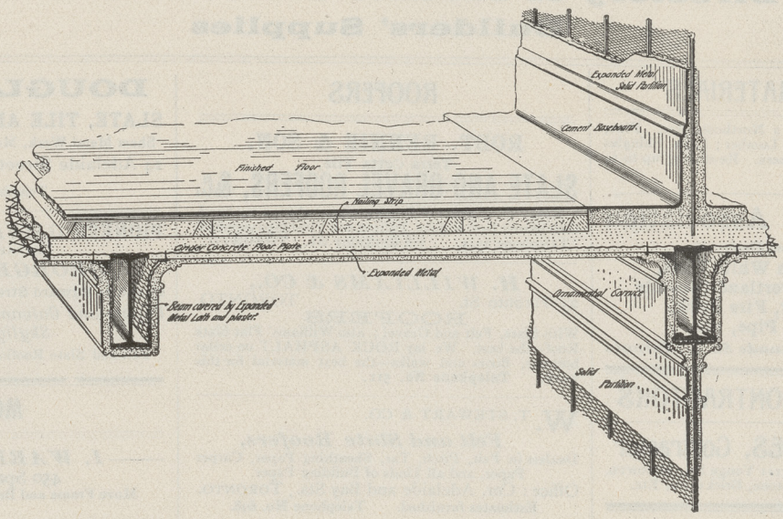

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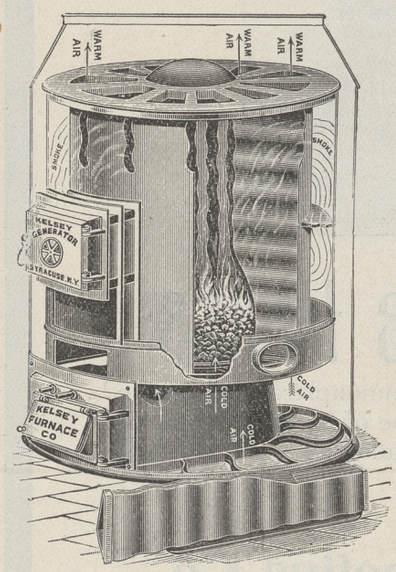

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